



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/660,167	09/11/2003	Paul Reuben Day	ROC920030144US1	7591
30206	7590	09/13/2006	EXAMINER	
IBM CORPORATION				PHAM, MICHAEL
ROCHESTER IP LAW DEPT. 917				
3605 HIGHWAY 52 NORTH				
ROCHESTER, MN 55901-7829				
				ART UNIT
				PAPER NUMBER
				2167

DATE MAILED: 09/13/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	Application No.	Applicant(s)
	10/660,167	DAY ET AL.
	Examiner Michael D. Pham	Art Unit 2167

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

1) Responsive to communication(s) filed on 20 June 2006.

2a) This action is **FINAL**.      2b) This action is non-final.

3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

4) Claim(s) 1-23 is/are pending in the application.

4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.

5) Claim(s) \_\_\_\_\_ is/are allowed.

6) Claim(s) 1-23 is/are rejected.

7) Claim(s) \_\_\_\_\_ is/are objected to.

8) Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

9) The specification is objected to by the Examiner.

10) The drawing(s) filed on \_\_\_\_\_ is/are: a) accepted or b) objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a) All    b) Some \* c) None of:

1. Certified copies of the priority documents have been received.
2. Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)	4) <input checked="" type="checkbox"/> Interview Summary (PTO-413)
2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)	Paper No(s)/Mail Date. _____
3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____	5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)
	6) <input type="checkbox"/> Other: _____

**Detailed Action**

1. Claims 1 - 23 have been examined.
2. Claims 1 - 23 are pending.
3. Claims 1 - 23 are rejected as detailed below.

***Claim Rejections - 35 USC § 101***

In light of applicant's arguments it is clear that the purpose of the application is to optimize query execution to avoid start-up delay. Thus, executing a query is most certainly a tangible result for a database management system. Similarly claim 7 running first and second tasks, which are by necessity computer operations that are more than mere data manipulation thus producing a result, and in addition claim 15, recites executing a query similar to claim 1.

Therefore, claims 1, 3-6, 7-9, 11-14, 15, and 17-18 for not reciting a tangible result is respectfully withdrawn.

***Claim Rejections - 35 USC § 112***

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1, 7, and 15 rejection under 35 U.S.C. 112, second paragraph is respectfully withdrawn.

***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-13 and 15-23 are rejected under 35 U.S.C. 102(b) as being anticipated by U.S. Patent 5560007 by Thai (hereafter Thai).

Thai discloses the following:

**1. A method for reducing input/output activity when running a database query, comprising the steps of:**

**executing the query on a plurality of table entries in a table using a bitmap having a respective element associated with each table entry** [Col. 9 lines 63-67, bitmaps are associated with records in a table during query execution.]; and

**concurrently with executing the query** [Col. 20 lines 34-40, determining if search query criteria (e.g. filter conditions) is met (e.g. in doing so it is executing the query). Col. 20 lines 60-61, updating bitmaps while retrieving records.], **generating the bitmap by initially setting a plurality of elements to an active value and selectively setting respective elements that are associated with entries that do not satisfy a portion of the query to an inactive value** [Col. 20 lines 34-40, the system initializes the bitmask for this group to 1. Col. 9 lines 63-65, If there is no index, the system still creates a bitmap; each bit is set to 1. As the table is scanned, records determined to not meet the query condition are removed from the bitmask (e.g. their corresponding bit is toggled from 1 to 0).];

**wherein executing the query includes accessing the bitmap before at least one element is set to an inactive value during generation of the bitmap to determine whether to retrieve a**

**table entry among the plurality of table entries**[Col. 11 lines 2-7, Once a record is retrieved, however, the system may determine whether to filter-out the record; a bitmap may be updated accordingly. Col. 9 lines 63-67 to col. 10 lines 1-4, As the table is scanned, records determined to not meet query condition are removed from the bitmask. Thus, on subsequent queries the system may restrict itself to those records remaining in the set.].

**2. The method according to claim 1, further comprising the step of: avoiding retrieval of a table entry after its corresponding bitmap element is set to an inactive value** [Col. 9 lines 66-67 to Col. 10 lines 1-4, records determined not to meet query conditions are removed from the bitmask (e.g. their corresponding bit is toggled from 1 to 0). Thus, on subsequent query operations performed for the expression, the system may restrict itself to those records remaining in the set. Col. 11 lines 5-6, the filtered out record will no longer be accessed as long as the filter remains active.].

**3. The method according to claim 1, further comprising the steps of:**  
**building an index over a column of the table** [Col. 20 lines 35-40, figure 5C. Col. 9 lines 60-67. creating bitmap index. Figure 5C discloses index over a column of the table]; **and**  
**determining whether each table entry satisfies the portion of the query based on the index** [Col. 9 lines 65-67 to col. 10 lines 1-5, scans the records and determines whether each table entry satisfies the portion of the query based on the index.].

4. The method according to claim 3, further comprising the steps of:

**scanning the table according to a first order when executing the query** [Thai, Col. 9

lines 66-67 to Col. 10 lines 1-2, scans a table when executing a query.]; and

**scanning the index according to a second order when determining whether each table entry satisfies the portion of the query**[Thai, Col. 10 lines 2-4. On subsequent query operations

performed for the expression the system may restrict itself to those records remaining in the set.

That is, it scans the bitmapped index to determine whether the portion of the query satisfied table entries].

5. The method according to claim 1, further comprising the steps of:

**retrieving a particular table entry having its corresponding bitmap element set to an active value** [Thai, Col. 9 lines 63-65, Scans table entries set to an active value ]; and

**determining if the particular table entry satisfies the query** [Thai, Col. 9 lines 66-67

to Col. 10 lines 1-2, If it does not satisfy change the 1 to a 0.].

6. The method according to claim 5, further comprising the step of:

**returning, as part of a result set, the particular table entry if it satisfies the query**

[Thai, Col. 1 lines 19-22, queries information.].

7. A method for executing a query that evaluates one or more records of a table according to predetermined selection criteria, comprising the steps of:

**initializing a bitmap wherein each element of the bitmap corresponds to a record of the table and each element is initialized to an active value** [Col. 9 lines 63-65, if there is no index the system still creates a bitmap; each bit is set equal to 1. As the table is scanned, records determined to not meet the query condition are removed from the bitmask.];

**running a first task that individually retrieves each of the one or more records from storage according to whether the corresponding element of the bitmap has an active value** [Col. 11 lines 2-7, Once a record is retrieved, however, the system may determine whether to filter-out the record; a bitmap may be updated accordingly. Col. 20 lines 34-40, as each record is actually read (e.g. retrieve) determining if search query criteria (e.g. filter conditions) is met (e.g. in doing so it is during executing the query). Filter out equivalent to toggling the bit to 0. ];

**running, concurrently with the first task, a second task that updates the bitmap by setting to an inactive value the respective element of the bitmap corresponding to any record that does not satisfy at least a portion of the selection criteria** [Col. 20 lines 60-61, updating bitmaps while retrieving records.]; and

**continuing to run the first task until all records from the table, having a corresponding active-value bitmap element, have been retrieved from storage** [Col. 10 lines 67 to col. 11 lines 7, all search criteria cannot be fully determined until the records are retrieved and examined. Once a record is retrieved however, the system may determine whether to filter out the record; a bitmap maybe updated accordingly.];

**wherein the first task accesses the bitmap before at least one element is set to an inactive value by the second task to determine whether to retrieve a record from storage**[Col. 11 lines 2-7, Once a record is retrieved, however, the system may determine whether to filter-out the record; a bitmap may be updated accordingly. Col. 9 lines 63-67 to col. 10 lines 1-4, As the table is scanned, records determined to not meet query condition are removed from the bitmask. Thus, on subsequent queries the system may restrict itself to those records remaining in the set.].

**8. The method according to claim 7, wherein the step of running the first task includes the steps of:**

**determining if a retrieved record satisfies the selection criteria**[Col. 9 lines 65-67 to col. 10 lines 1-5, scans the records and determines whether each table entry satisfies the portion of the query based on the index.]; and

**returning, as part of a query result set, the retrieved record if the selection criteria is satisfied**[Thai, Col. 1 lines 19-22, queries information.].

**9. The method according to claim 7, wherein the step of running the second task includes the steps of:**

**scanning a column of the table using an index built over the column, wherein the portion of the selection criteria relates to record values within the column** [Col. 20 lines 35-40, figure 5C. Col. 9 lines 60-67. creating bitmap index. Figure 5C discloses index over a column of the table];

**determining a set of records whose record values within the column do not satisfy the portion of the selection criteria** [As the table is scanned, records determined to not meet the query condition are removed from the bitmask (e.g. their corresponding bit is toggled from 1 to 0).]; and

**changing the respective corresponding bitmap element to an inactive value for each record within the set of records** [As the table is scanned, records determined to not meet the query condition are removed from the bitmask (e.g. their corresponding bit is toggled from 1 to 0).].

**10. The method according to claim 7, wherein the step of running a first task includes the step of:**

**discarding any record having a corresponding bitmap element which has an inactive value, by not retrieving that record from storage** [Col. 9 lines 66-67 to Col. 10 lines 1-4, records determined not to meet query conditions are removed from the bitmask (e.g. their corresponding bit is toggled from 1 to 0). Thus, on subsequent query operations performed for the expression, the system may restrict itself to those records remaining in the set. Col. 11 lines 5-6, the filtered out record will no longer be accessed as long as the filter remains active.].

**11. The method according to claim 7, further comprising the step of:**

**optimizing a query plan for the query by labeling the query as a candidate for dynamic bitmap updating** [Thai, Col. 4 lines 21-24, On the fly updating bitmaps for filtered conditions (i.e. dynamically update bitmaps based on queried conditions)].

**12. The method according to claim 11, further comprising the step of:**  
**before initializing the bitmap and starting the first task and second task, determining if the query is labeled as a candidate for dynamic bitmap updating**[Thai, Col. 4 lines 9-11, optimization module employs one or more existing indices for optimizing data access.].

**13. The method according to claim 9, wherein a first order in which the one or more records is retrieved differs from a second order in which the column of the table is scanned**[Thai, col. 11 lines 5-7, On subsequent operations the filtered out record will no longer be accessed (again as long as that filter remains active).].

**15. A computer-readable medium bearing instructions for reducing input/output activity while executing a query, said instructions being arranged, upon execution thereof, to cause one or more processors to perform the steps of:**  
**executing the query on a plurality of table entries in a table using a bitmap having a respective element associated with each table entry** [Col. 9 lines 63-67, bitmaps are associated with records in a table during query execution.]; and  
**concurrently with executing the query** [Col. 20 lines 34-40, determining if search query criteria (e.g. filter conditions) is met (e.g. in doing so it is executing the query). Col. 20 lines 60-61, updating bitmaps while retrieving records.], **generating the bitmap by initially setting a plurality of elements to an active value and selectively setting respective elements that are associated with entries that do not satisfy a portion of the query to an inactive**

**value**[Col. 20 lines 34-40, the system initializes the bitmask for this group to 1. Col. 9 lines 63-65, If there is no index, the system still creates a bitmap; each bit is set to 1. As the table is scanned, records determined to not meet the query condition are removed from the bitmask (e.g. their corresponding bit is toggled from 1 to 0).];

**wherein executing the query includes accessing the bitmap before at least one element is set to an inactive value during generation of the bitmap to determine whether to retrieve a table entry among the plurality of table entries**[Col. 11 lines 2-7, Once a record is retrieved, however, the system may determine whether to filter-out the record; a bitmap may be updated accordingly. Col. 9 lines 63-67 to col. 10 lines 1-4, As the table is scanned, records determined to not meet query condition are removed from the bitmask. Thus, on subsequent queries the system may restrict itself to those records remaining in the set.].

16. The computer-readable medium according to claim 15, bearing additional instruction, said additional instructions being arranged, upon execution thereof, to cause one or more processors to perform the steps of:

**avoiding retrieval of a table entry after its corresponding bitmap element is set to an inactive value** [Col. 9 lines 66-67 to Col. 10 lines 1-4, records determined not to meet query conditions are removed from the bitmask (e.g. their corresponding bit is toggled from 1 to 0). Thus, on subsequent query operations performed for the expression, the system may restrict itself to those records remaining in the set. Col. 11 lines 5-6, the filtered out record will no longer be accessed as long as the filter remains active.]

17. The computer-readable medium according to claim 15, bearing additional instruction, said additional instructions being arranged, upon execution thereof, to cause one or more processors to perform the steps of:

**building an index over a column of the table** [Col. 20 lines 35-40, figure 5C. Col. 9 lines 60-67. creating bitmap index. Figure 5C discloses index over a column of the table]; and

**determining whether each table entry satisfies the portion of the query based on the index** [Col. 9 lines 65-67 to col. 10 lines 1-5, scans the records and determines whether each table entry satisfies the portion of the query based on the index.]

18. The computer-readable medium according to claim 17, bearing further instruction, said further instructions being arranged, upon execution thereof, to cause one or more processors to perform the steps of:

**scanning the table according to a first order**<sup>1</sup> **when executing the query** [Thai, Col. 9 lines 66-67 to Col. 10 lines 1-2, scans a table when executing a query.]; and

**scanning the index according to a second order**<sup>2</sup> **when determining whether each table entry satisfies the portion of the query** [Thai, Col. 10 lines 2-4. On subsequent query operations performed for the expression the system may restrict itself to those records remaining

---

<sup>1</sup> First order not in specifications. Examiner broadly interprets as scanning a table when executing a query.

<sup>2</sup> Second order not in specifications. Examiner broadly interprets as scanning an index for entries that satisfied the query.

in the set. That is, it scans the bitmapped index to determine whether the portion of the query satisfied table entries].

19. An apparatus for executing a query comprising:

**at least one processor** [figure 1A element 101];

**a memory coupled with the at least one processor** [figure 1A element 109]; and

**a database engine residing in the memory and executed by the at least one processor**

**[Col. 6 lines 46-56], the database engine configured to initialize each element of a bitmap, corresponding to a table, to an active value** [Col. 9 lines 63-65, if there is no index the system still creates a bitmap; each bit is set equal to 1. As the table is scanned, records determined to not meet the query condition are removed from the bitmask.];

**retrieve records of the table according to the bitmap**[Col. 11 lines 2-7, Once a record is retrieved, however, the system may determine whether to filter-out the record; a bitmap may be updated accordingly. Col. 20 lines 34-40, as each record is actually read (e.g. retrieve) determining if search query criteria (e.g. filter conditions) is met (e.g. in doing so it is during executing the query). Filter out equivalent to toggling the bit to 0. ]; and

**concurrently with retrieving the records, update individual elements of the bitmap according to a portion of the query, wherein the database engine is configured to access the bitmap before at least one individual element of the bitmap has been updated to determine whether to retrieve a record of the table**[Col. 11 lines 2-7, Once a record is retrieved, however, the system may determine whether to filter-out the record; a bitmap may be updated accordingly. Col. 9 lines 63-67 to col. 10 lines 1-4, As the table is scanned, records determined

to not meet query condition are removed from the bitmask. Thus, on subsequent queries the system may restrict itself to those records remaining in the set.].

**20. The apparatus according to claim 19, wherein the bitmap includes a respective element for each record of the table**[Col. 9 lines 63-67, bitmaps are associated with records in a table during query execution.].

**21. The apparatus according to claim 20, wherein the database engine is further configured to analyze the retrieved records to determine if selection criteria of the query are met**[As the table is scanned, records determined to not meet the query condition are removed from the bitmask (e.g. their corresponding bit is toggled from 1 to 0).].

**22. The apparatus according to claim 21, wherein the database engine is further configured to avoid an input/output operation for any record having a corresponding bitmap element set to an inactive value**[Col. 9 lines 66-67 to Col. 10 lines 1-4, records determined not to meet query conditions are removed from the bitmask (e.g. their corresponding bit is toggled from 1 to 0). Thus, on subsequent query operations performed for the expression, the system may restrict itself to those records remaining in the set. Col. 11 lines 5-6, the filtered out record will no longer be accessed as long as the filter remains active.].

**23. The apparatus according to claim 22, wherein the database engine is configured to use a**

**pre-built index related to the portion of the query when updating individual elements of the bitmap**[Thai, Col. 3 lines 29-30, pre-existing index which supports a query].

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

***Claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over Thai (U.S. Patent 5,560,007) further in view of U.S. Patent 6,757,670 by Inohara et. al. (hereafter Inohara).***

14. Thai disclose the method of claim 7 and further disclose optimization methods based on indexes; however Thai does not explicitly disclose **collecting statistics related to performance of executing the query and generating a recommendation presented to a user for creating a permanent index based on the statistics.**

On the other hand, Inohora discloses presenting optimization methods from user and using statistic information in Col. 2 lines 43-60.

All inventions are directed towards query optimization. Therefore it would have been obvious to have modified Thai to include the steps of collecting statistics related to performance of

executing the query and generating a recommendation presented to a user for creating a permanent index based on the statistics. A skilled artisan would have been motivated to do so for the purpose of obtaining a good execution plan for a query (Inohora, Col. 3 lines 44-46).

***Response to Arguments***

Applicant's arguments, see Applicant's remarks, filed 6/20/06, with respect to the rejection(s) of claim(s) 1-23 under 103a have been fully considered and were persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of U.S. Patent 5560007 by Thai.

Applicant's have asserted the following (numbered below) about the Thai (U.S. Patent 5560007) reference which was presented on page 12 of Applicant's remarks:

1. That the Thai reference does disclose the generation of a bitmap by setting each bit initially to 1, and then setting individual bits to 0 when associated records are found to not meet a query condition. However Thai does not disclose that these operations performed during generation of a bitmap can be performed concurrent with the execution of a query, and in particular concurrent with the use of a bitmap during execution of a query to determine whether to retrieve specific table entries.

*In response, the examiner respectfully disagrees with Applicants. The Thai reference suggests that the operations are performed while executing the query and hence is concurrent. E.g. Col.*

*20 lines 60-61 updating bitmaps while retrieving records. The operations performed are for optimizing a query, made concurrent with the execution. The optimization module consists of a non-optimized mode query, learned mode query, full mode query, and partially optimized query mode (col 10 and 11 of the Thai reference).*

2. That the Thai bitmaps are never accessed for the purpose of determining whether to retrieve records for further consideration at any point prior to the bitmaps being completely built. Instead Thai discloses the constructed bitmap to exclude records at a later point in time from when the bitmap has been fully built.

*In response, the examiner respectfully disagrees; Thai does appear to suggest that bitmaps are accessed to determine whether to retrieve records for further consideration prior to the bitmaps being completely built. That is, Col. 9 lines 63-67 to col. 10 lines 1-2 discloses the following steps: in creating the bitmap, bits are initialized to 1, table is scanned records are determined to not meet query criteria are removed from the bitmask by toggling from 1 to 0. [e.g. bits are initialized to 1, the records are accessed, as records are determined bits are updated (e.g. determining whether to retrieve records for further consideration at a point prior to the bitmaps being completely built.), when table scan finishes of course bitmap is finally completely built.*

*Whatever is a 1 is retrieved. On subsequent queries that are of the same expression, it is faster to retrieve records corresponding to the bit.]*

3. That the Thai reference is directed to generating a bitmap in one task while executing a query and accessing the bitmap in another task.

*In response, the examiner respectfully disagrees. Thai discloses, Col. 20 lines 60-61, updating bitmaps while retrieving records, which must have multiple tasks. Further, there appears to be confusion as to whether the applicant's claimed invention actually retrieves and presents the records prior to the bitmap being completely built in a consistent manner (e.g. if the same or similar query is made, is another bitmap created?). Claims as read appear to only determine whether to retrieve the record before at least one element of the bitmap is set to an inactive value. The Thai reference appears to disclose determining whether to retrieve the record before at least one element of the bitmap is set to an inactive value, this occurs while the table is completely scanned (e.g. records are determined) and bitmaps are updated (e.g. set to inactive) and thus before the bitmap is completely built. In applicant's next response please provide citations in specifications that correspond to claims.*

### ***Conclusion***

The prior art made of record listed on PTO-892 and not relied, if any, upon is considered pertinent to applicant's disclosure.

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael D. Pham whose telephone number is (571)272-3924. The examiner can normally be reached on Monday - Friday 9am - 5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John Cottingham can be reached on 571-272-7079. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

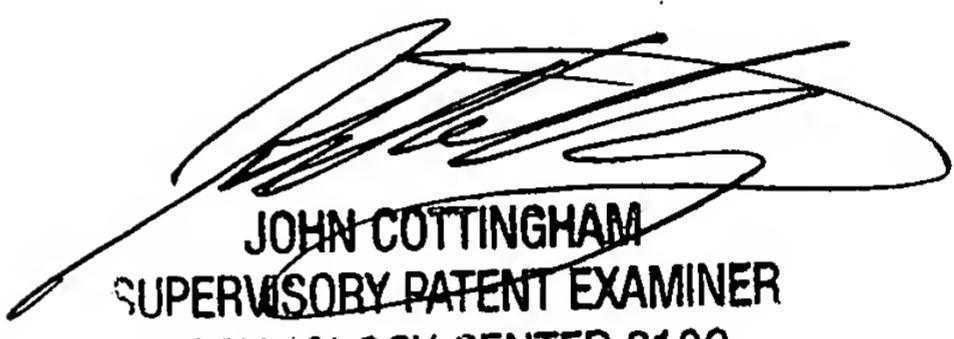
Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Michael Pham  
Art Unit 2167  
Examiner  
8/30/06

Debbie Le  
Art Unit 2168  
Primary Examiner

DL

John Cottingham  
Art Unit 2167  
Supervisor



JOHN COTTINGHAM  
SUPERVISORY PATENT EXAMINER  
TECHNOLOGY CENTER 2100